



## Case Report

# Treating the tongue thrusting: A case report

Neha Aggarwal<sup>1</sup>, Karan Bansal<sup>2,\*</sup>, B.P Bansal<sup>1</sup>

<sup>1</sup>Private Practitioner, Bhatinda, Punjab, India

<sup>2</sup>Adesh institute of dental sciences and research, Bathinda, Punjab, India



### ARTICLE INFO

#### Article history:

Received 12-08-2020

Accepted 24-08-2020

Available online 04-09-2020

#### Keywords:

Tongue Thrusting

Anterior open bite

Infant swallow

Protrusion

Palatal crib

Palatal spurs

### ABSTRACT

Presence of an infantile swallow during childhood and adolescence often leads to tongue thrusting which clinically presents a picture of an anterior open bite with protruded of anterior tooth segment. Tongue thrusting habit is the primary etiological factor in the development of an anterior open bite. Management of such abnormal habit includes removal of the underlying etiology, retraining exercises along with the support of mechanical restrictive orthodontic appliances. Palatal crib or palatal spurs are the most commonly used habit-breaking appliances. This case report discusses a case with anterior open bite caused due to tongue thrusting with dental proclination and spacing which was treated by a fixed tongue appliance in the form of a palatal crib for three months, which was followed up regularly in subsequent months.

© 2020 Published by Innovative Publication. This is an open access article under the CC BY-NC license (<https://creativecommons.org/licenses/by-nc/4.0/>)

## 1. Introduction

A habit is a repetitive action that is repeatedly performed and being done automatically.<sup>1</sup> Our mouth is a primary location for expression of emotions. Also it is a source of relief in passion and anxiety in both children and adults. It gives a soothing feeling when the region is stimulated with tongue, finger or sometimes a nail.<sup>2</sup>

An anterior open bite can be caused due to a number of factors like unfavorable growth pattern, hereditary, pacifier and digit sucking habits, retained infantile swallowing habits, enlarged lymphoid tissue, tongue function and tongue posture. Thus to manage such complex and challenging malocclusions, a dentist often requires a combination of behavior modification and orthodontic and dentofacial orthopedic therapies.<sup>3</sup>

Unfortunately, correction of the anterior open bite is only a part of the treatment. Smithpeter J, Lopez-Gavito and their colleagues in their research studies found a relapse of anterior bite by more than 3mm within 10 years of treatment

in more than 35% of the patients who were treated with conventional orthodontic appliances.<sup>4</sup>

Many authors agree that secondary dysfunctions, such as poor tongue posture at rest can still persist after the correction of abnormal function. The continuous and gentle pressure exerted by the tongue against the anterior teeth can have very significant and deleterious consequences. Therefore modification of the tongue behavior is thus likely to improve the stability of corrected anterior open bites.<sup>5</sup>

Tongue crib is an orthodontic appliance which induces a change in the resting position of the tongue and thus allowing normal tooth eruption and closure of an anterior open bite. Some authors have found the crib appliance to be successful in modifying the tongue behavior.<sup>6</sup> The present article describes the management of the abnormal tongue thrusting habit in a 7 year-old female patient with a habit breaking appliance.

## 2. Case Report

A 7 year-old female reported to the Department of pedodontics and preventive dentistry with a severe anterior

\* Corresponding author.

E-mail address: [bansalfamilydentals@gmail.com](mailto:bansalfamilydentals@gmail.com) (K. Bansal).

open bite and irregularly aligned teeth. On Clinical examination, the patient presented with a convex facial profile, an acute nasolabial angle, contracted perioral muscles. A reverse smile arc with inadequate exposure of the maxillary incisors was clearly visible with a naked eye.

During evaluation of the oral-perioral function, the patient showed tongue thrusting while swallowing and also had difficulty in pronouncing some particular words. During history taking of the patient, the patient admitted to had left using the pacifier. She had no remaining sucking habits, which clearly suggested that the anterior open bite was solely because of her abnormal tongue posture.

Therefore, in this case, a fixed palatal crib to restrain the tongue was the appliance prescribed to the patient. The palatal crib fabricated was extended upto the lingual gingival margins of the mandibular incisors and transversely from canine to canine so that maximum possible anterior region of the tongue was covered and thus prevent the further accommodation of the abnormal tongue posture.

The palatal crib was fabricated on the cast using a .036" stainless steel wire, adapted to the plaster cast and then welded onto the first-molar bands and to palatal and transpalatal arches to strengthen the crib structure and prevent forward-rocking movements.

Follow up of the patient was done after every month. After 6 months, the appliance was detached and checked for the tongue position and swallowing pattern. Clinically the patient showed changes in her swallowing from an infantile to mature pattern.



**Fig. 1:** Preoperative images showing Anterior open bite (Front and lateral) view



**Fig. 2:** Intraoperative image showing Palatal crib fixed.



**Fig. 3:** Postoperative follow up showing closure of open bite after three months.

### 3. Discussion

Tongue thrusting can be defined as a behavioral pattern in which the tongue makes contact with any teeth anterior to the molars during swallowing. The most important consideration for the correction of the tongue thrusting habit is to redirect the tongue's resting position. So to effectively manage this, the fixed palatal crib is a good treatment modality. Thus, both the crib design and duration of the treatment are two important considerations for success.<sup>7</sup> A palatal crib corrects an anterior open bite as it prevents the tongue to rest onto the teeth. The designing of the crib be such that it should extend far enough inferiorly to keep the tongue from positioning itself below the crib.

Smithpeter and Covell in their study found an average overbite relapse of 3.4mm, with a range of 1-7mm.<sup>8</sup> Dennison and colleagues reported that surgically corrected anterior open bites also exhibited significant relapse.<sup>9</sup> Chiba and his colleagues in a meta analytical research found a relapse after about three years where both surgical and nonsurgical treatment of anterior open bite was done.<sup>10</sup> One possible explanation for these findings could be lack of understanding of the possible role of tongue function and posture in the causation of anterior open bite.

Subtelny and Sakuda reported an unsuccessful redirection of tongue position in open-bite treatment when the fixed palatal crib was worn for less than six months.<sup>11</sup> There is now a consensus that these appliances should be fixed with the objective of bringing the dentition into normal function until spontaneous favorable movement is achieved.

Taslan and his colleagues found that resting tongue pressure remained significantly lower than initial values at the 12th month of crib wearing. These findings clearly suggested that the tongue adapts to the new position guided by the appliance. The concerned patient used the crib for three months long enough to produce definitive behavioral changes.<sup>12</sup>

In the present case, the patient had tongue thrusting habit and also reported to have difficulties during speech. So for deciding the line of treatment, it was imperative to understand the etiology which includes psychological, physiological and anatomical and planning for behavior

modification for the successful outcomes.

From counselling to appliance therapy, numerous treatment modalities have been reported in the literature, hence we planned to counsel the patient first but there was no regression in the habit. So ultimately we planned to give an appliance that would break both the habits with special consideration given to the speech problem, the palatal crib appliance was fabricated so that there was no interference with the speech.

#### 4. Conclusion

Abnormal tongue posture in the presence of anterior open bite must be analyzed and addressed with appropriate understanding. It is recommended to start with the least invasive methods like counseling before using habit breaking appliances. Some children need additional support to stop the habit and thus habit-breaking appliances are indicated. Habit-breaking appliances can be either fixed or removable. One of the fixed appliances used to break the habit is the palatal crib appliance. The standardized fabrication method presented in this article enables clinicians to produce cribs that are optimally designed and will thus reduce the chair side time required for adjustments. Long-term evaluation of the performance of standardized cribs and the stability of their results is required for promising results in the future.

#### 5. Source of Funding

None.

#### 6. Conflict of Interest

None.

#### References

1. Subtelny JD, Subtelny JD. Oral habits: studies in form, function, and therapy. *Angle Orthod.* 1973;4:347–83.
2. Singh S, Prerna, Dua P, Jain S. Habit Breaking Appliance for Tongue Thrusting - A Modification. *Indian J Dent Sci.* 2011;3(3):10–2.
3. Yami EAA, Kuijpers-Jagtman AM, van 't Hof MA. Stability of orthodontic treatment outcome: Follow-up until 10 years postretention. *Am J Orthod Dentofacial Orthop.* 1999;115(3):300–4.
4. Lopez-Gavito G, Wallen TR, Little RM, Joondeph DR. Anterior open-bite malocclusion: A longitudinal 10-year postretention evaluation of orthodontically treated patients. *Am J Orthod.* 1985;87(3):175–86.
5. Shahraki N, Yassaee S, Moghadam MG. Abnormal oral habits: A review. *J Dent Oral Hyg.* 2012;4(2):12–5.
6. Cozza P, Baccetti T, Franchi L, Mucedero M. Comparison of 2 early treatment protocols for open-bite malocclusions. *Am J Orthod Dentofac Orthop.* 2007;132(6):743–7.
7. Falk ML. Neuromuscular facilitation for the control of tongue thrust swallowing. Philadelphia. Harper and Row; 1987.
8. Smithpetera J, Covell DJ. Relapse of anterior open bites treated with orthodontic appliances with and without orofacial myofunctional therapy. *Am J Orthod Dentofacial Orthop.* 2010;137(5):605–15.
9. Dennison TF, Kokich VG, Shapiro PA. Stability of maxillary surgery in open bite versus non open bite malocclusions. *Angle Orthod.* 1989;59:5–10.
10. Chiba Y, Motoyoshi M, Namura S. Tongue pressure on loop of transpalatal arch during deglutition. *Am J Orthod Dentofac Orthop.* 2003;123(1):29–34.
11. Subtelny JD, Sakuda M. Open-bite: Diagnosis and treatment. *Am J Orthod.* 1964;50(5):337–58.
12. Taslan S, Biren S, Ceylanoglu C. Tongue Pressure Changes Before, During and After Crib Appliance Therapy. *Angle Orthod.* 2010;80(3):533–9.

#### Author biography

**Neha Aggarwal** Private Practitioner

**Karan Bansal** Senior Lecturer

**B.P Bansal** Private Practitioner

**Cite this article:** Aggarwal N, Bansal K, Bansal BP. **Treating the tongue thrusting: A case report.** *IP Indian J Orthod Dentofacial Res* 2020;6(3):181-183.